

REMARKS

This is a full and timely response to the outstanding non-final Office Action mailed March 15, 2005. Claim 2 is amended to correct a typographical error, claims 1, 3, 14 and 17 are amended for clarification, claim 4 is amended to simply place it in independent form, claim 8 is cancelled, and claims 23-29 are newly added in this response. Claims 1-22 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,186,373 to *Johanson, et al.* hereinafter referred to as *Johanson*.

As set forth below, each of the rejections above are respectfully traversed. Accordingly, Applicant respectfully requests reconsideration of the application and presently pending claims based on the following remarks. Applicant respectfully submits that the claims as presented are in condition for allowance.

I. Response to Rejection of Claims 1-3, 14 Pursuant to 35 U.S.C. § 103(a)

A. Johanson Does Not Disclose, Teach or Suggest All Elements of Claims 1 and 3.

Claim 1 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over *Johanson*. It is asserted in the Office Action that *Johanson* teaches a “transition section seen in Figure 1B.” *Office Action, p. 2*. Applicant acknowledges this characterization of *Johanson*. It is acknowledged in the Office Action, however, that *Johanson* “lacks the rectangular top opening.” *Office Action, p. 2*. Applicant acknowledges this characterization of *Johanson*. It is further asserted in the Office Action, that *Johanson* “lacks the matching rectangular conduit section.” *Office Action, p. 2*. Applicant acknowledges that *Johanson* apparently does not teach a rectangular conduit section to match a rectangular top opening that *Johanson* also apparently does not teach. Further, it is asserted in the Office Action, that *Johanson* shows “an almost rectangular opening and conduit in Figure 1B having two parallel sides.” Applicant respectfully disagrees with this characterization of *Johanson*.

It is well established that, for a proper rejection of a claim under 35 U.S.C. § 103 as being obvious based upon a single reference, the reference must disclose, teach or suggest either implicitly or explicitly all elements, features or steps of the claim at issue.

See e.g., *In re Dow Chemical*, 5 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1988), and *In re Keller*, 208 U.S.P.Q.2d 871, 881 (C.C.P.A. 1981).

The rejection of claim 1 should be removed because *Johanson* does not disclose, teach or suggest “a trough-shaped feeder having a substantially-rectangular top opening” or “a transitional section” having “a circular-to-rectangular conduit interposed between the substantially-circular bin opening and the substantially-rectangular top opening of the trough-shaped feeder”.

It is asserted in the Office Action that *Johanson* shows a transition section between a hopper and a trough feeder. *Office Action*, p. 2. Applicant respectfully submits that the problem to be solved is not merely matching any arbitrary bin with any arbitrary opening in a trough feeder, but rather with transitioning from a hopper to a rectangular opening in a manner that enhances particulate flow. As acknowledged by the Examiner, *Johanson* “lacks the rectangular top opening” (in the trough). *Office Action*, p. 2. Applicant respectfully submits that if *Johanson* lacks the rectangular top opening, then *Johanson* does not disclose, teach or suggest a transition section such as a circular-to-rectangular conduit between the substantially-circular bin opening (on the hopper) and the substantially-rectangular opening (on the trough-shaped feeder). Moreover, *Johanson* does not have two parallel sides, but instead has **converging** sides. The converging lines appear to be simply omitted from FIG. 1B, though they are shown in FIG. 1A and FIG. 2. Applicant respectfully submits that the sides cannot be parallel since they are “converging” from a circular opening, and thus the opening is not substantially-rectangular, but rather is substantially-circular.

For at least the reasons cited above, Applicant respectfully submits that the rejection of claim 1 should be withdrawn since *Johanson* fails to disclose, teach or suggest a transition section, such as a circular-to-rectangular conduit, between the substantially-circular bin opening (on the hopper) and the substantially-rectangular opening (on the trough-shaped feeder), or a rectangular top opening to a trough-shaped feeder. In addition, claims 1 and 3 have been amended to clarify that the trough-shaped feeder recited therein refers to section 130, Figs. 1 and 3, that has rectangular-shaped

openings at both its top and bottom openings. No counterpart to section 130 is disclosed in *Johanson*.

B. Claims 2 and 14 are Allowable as a Matter of Law Because Each Depends from an Allowable Independent Claim.

Claims 2 and 14 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Johanson*. Applicant respectfully submits that because independent claim 1 is allowable, as argued above, dependent claim 2 is allowable as a matter of law for at least the reason that dependent claim 2 contains all elements, features and limitations of independent claim 1 and the same regarding claim 14 that depends upon claim 3. See e.g., *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988).

II. **Response to Rejection of Claims 4-6 Pursuant to 35 U.S.C. § 103(a)**

A. *Johanson* Does Not Disclose, Teach or Suggest All Elements of Claim 4.

Claim 4 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over *Johanson*. It is asserted in the Office Action that *Johanson* teaches a “transition section seen in Figure 1B.” *Office Action*, p. 2. Applicant acknowledges this characterization of *Johanson*.

The rejection of claim 4 should be removed because *Johanson* does not disclose, teach or suggest a rectangular-to-circular conduit that the area of its rectangular opening is greater than the area of its circular opening. Claim 4 recites: “..., wherein the area of the rectangular feeder opening is greater than the area of the circular conduit opening.”

Claim 4, that has been amended to place it in independent form, is allowable over *Johanson* for at least the reason that it does not disclose, teach or suggest the features that are highlighted in claim 4 above. *Johanson* discloses that “[t]he simplest form of the invention is a single continuous specifically designed screw 1 shown in FIG. 1A under a preferably **one-dimensional convergence hopper 2**.” *Johanson*, column 3, lines 58-60. (*Emphasis Added*.) A convergence hopper necessarily gets smaller as the particulate flow approaches the feeder-trough. Even if *Johanson* disclosed a rectangular opening, which rectangular opening Applicant does not acknowledge, the opening would necessarily be

smaller at the opening near the feeder trough, and thus could not be greater than the area of the circular opening.

B. Claims 5-6 are Allowable as a Matter of Law Because Each Depends from an Allowable Independent Claim.

Claims 5-6 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Johanson*. Applicant respectfully submits that because independent claim 3 is allowable, as argued above, dependent claims 4-6 are allowable as a matter of law for at least the reason that each claim contains all elements, features and limitations of independent claim 3. *See e.g., In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988).

III. **Response to Rejection of Claims 7, 9-13 and 15-16 Pursuant to 35 U.S.C. § 103(a)**

A. *Johanson* Does Not Disclose, Teach or Suggest All Elements of Claim 7.

Claim 7 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over *Johanson*. Applicant notes the same observations as applied for independent claims 1 and 3 above with the addition that claim 7 claims a rectangular-to-elliptical conduit. The rejection of claim 7 should be removed because *Johanson* does not disclose, teach or suggest “a trough-shaped feeder with a substantially-rectangular feeder opening” or “a rectangular-to-elliptical conduit having an elliptical end and a rectangular end” with “rectangular end having a substantially-rectangular conduit opening”.

Claim 7 recites:

7. A particulate-matter-delivery system comprising:
a trough-shaped feeder with a substantially-rectangular feeder opening; and
a rectangular-to-elliptical conduit having an elliptical end and a rectangular end, the rectangular-to-elliptical conduit **extending from the substantially-rectangular opening of the trough-shaped feeder,** the elliptical end having a substantially-elliptical conduit opening, the rectangular end having a substantially-rectangular conduit opening, the substantially-rectangular conduit opening being mated to the substantially-rectangular feeder opening.

(Emphasis Added.)

Independent claim 7 is allowable over *Johanson* for at least the reason that it does not disclose, teach or suggest the features that are highlighted in claim 7 above. It is asserted in the Office Action that *Johanson* shows a transition section between a hopper and a trough feeder. *Office Action*, p. 2. As noted above, Applicant respectfully submits that the problem to be solved is not merely matching any arbitrary bin with any arbitrary opening in a trough feeder, but rather with transitioning from a hopper to a rectangular opening in a manner that enhances particulate flow. As acknowledged by the Examiner, *Johanson* “lacks the rectangular top opening” (in the trough). *Office Action*, p. 2. Applicant respectfully submits that if *Johanson* lacks the rectangular end, then *Johanson* does not disclose, teach or suggest a rectangular-to-elliptical conduit having a rectangular end and extending from the substantially-rectangular opening of the trough-shaped feeder.

B. *Johanson* Does Not Disclose, Teach or Suggest All Elements of Claim 9 and 10.

Claims 9 and 10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Johanson*. It is asserted in the Office Action that *Johanson* teaches a “transition section seen in Figure 1B.” *Office Action*, p. 2. Applicant acknowledges this characterization of *Johanson*.

The rejection of claims 9 and 10 should be removed because *Johanson* does not disclose, teach or suggest that the area of the rectangular opening is greater than the area of the circular opening.

Claim 9 recites:

9. The system of claim 7, wherein **the area of the substantially-rectangular feeder opening is greater than the area of the substantially-elliptical conduit opening.**

(Emphasis Added.)

And claim 10 recites:

10. The system of claim 9, wherein **the cross-sectional area of the rectangular-to-elliptical conduit progressively decreases from the rectangular conduit end to the elliptical conduit end.**

(Emphasis Added.)

Dependent claims 9 and 10 are allowable over *Johanson* for at least the reason that it does not disclose, teach or suggest the features that are highlighted in claims 9 and

10 above. More specifically, *Johanson* does not disclose, teach or suggest a rectangular-to-elliptical conduit such that “the area of the substantially-rectangular feeder opening is greater than the area of the substantially-elliptical conduit opening.” *Johanson* discloses that “[t]he simplest form of the invention is a single continuous specifically designed screw 1 shown in FIG. 1A under a preferably **one-dimensional convergence hopper 2**.” *Johanson*, column 3, lines 58-60. (*Emphasis Added.*) A convergence hopper necessarily gets smaller as the particulate flow approaches the feeder-trough. Even if *Johanson* disclosed a rectangular opening, which rectangular opening Applicant does not acknowledge, the opening would necessarily be smaller at the opening near the feeder trough, and thus could not be greater than the area of an elliptical opening.

C. Claims 9-13 and 15-16 are Allowable as a Matter of Law Because Each Depends from an Allowable Independent Claim.

Claims 9-13 and 15-16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Johanson*. Applicant respectfully submits that because independent claim 7 is allowable, as argued above, dependent claims 9-13 and 15-16 are allowable as a matter of law for at least the reason that each claim contains all elements, features and limitations of independent claim 7. *See e.g., In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988).

IV. **Response to Rejection of Claims 17-22 Pursuant to 35 U.S.C. § 103(a)**

A. *Johanson* Does Not Disclose, Teach or Suggest All Elements of Claim 17.

Claim 17 was rejected under 35 U.S.C. § 103(a) as being unpatentable over *Johanson*. The rejection of claim 17 should be removed because *Johanson* does not disclose, teach or suggest “circular-to-rectangular conduit” Additionally, claim 17 has been amended to recite that the area of the rectangular opening of the conduit is greater than the area of the circular opening. Thus, claim 17 is also allowable for the same reasons as claim 4, discussed above, as this feature is not taught or suggested by *Johanson* either.

B. *Johanson* Does Not Disclose, Teach or Suggest All Element of Claims 18 and 20-22

Claims 18 and 20-22 were rejected under 35 U.S.C. §103(a) as being unpatentable over *Johanson*.

Claim 18 recites:

18. A method for reducing bridging in particulate-matter-delivery systems, the method comprising the steps of:
interfacing a storage hopper with a trough-shaped feeder using an **elliptical-to-rectangular conduit**; and
directing particulate matter from the storage hopper to the trough-shaped feeder through the **elliptical-to-rectangular conduit**.

(Emphasis Added.)

Claim 21 recites:

21. A method for reducing bridging in particulate-matter-delivery systems, the method comprising the steps of:
coupling a cylindrical storage hopper to a elliptical end of the **elliptical-to-rectangular conduit**, the cylindrical storage hopper having a substantially-elliptical axial profile, the cylindrical storage hopper further having a substantially-elliptical hopper opening, the elliptical end of the elliptical-to-rectangular conduit having a substantially-elliptical conduit opening, the substantially-elliptical conduit opening being substantially similar in shape to the substantially-elliptical hopper opening, the substantially-elliptical conduit opening being substantially similar in size to the substantially-elliptical hopper opening; and
coupling a trough-shaped feeder to a rectangular end of the **elliptical-to-rectangular conduit**, the trough-shaped feeder having a substantially-rectangular feeder opening, the rectangular end of the **elliptical-to-rectangular conduit** having a substantially-rectangular conduit opening, the substantially-rectangular conduit opening being substantially similar in shape to the substantially-rectangular feeder opening, the substantially-rectangular conduit opening being substantially similar in size to the substantially-rectangular feeder opening.

(Emphasis Added.)

Independent claims 18 and 21 are allowable over *Johanson* for at least the reason that it does not disclose, teach or suggest the features that are highlighted in claims above, for at least the reasons discussed above in relation to claim 7.

C. *Johanson* Does Not Disclose, Teach or Suggest All Elements of Claim 19.

Claim 19 was rejected under 35 U.S.C. § 103(a) as being unpatentable over *Johanson*. It is asserted in the Office Action that *Johanson* teaches a “transition section seen in Figure 1B.” *Office Action*, p. 2. The rejection of claim 19 should be removed because *Johanson* does not disclose, teach or suggest that the claimed area of the rectangular opening is greater than the area of the circular opening, as discussed in more detail above in relation to claim 4.

D. Claims 19, 20 and 22 are Allowable as a Matter of Law Because Each Depends from an Allowable Independent Claim.

Claims 19, 20 and 22 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Johanson*. Applicant respectfully submits that because independent claims 18 and 21 are allowable, as argued above, dependent claims 19, 20 and 22 are allowable as a matter of law for at least the reason that each claim contains all elements, features and limitations of their respective independent base claims. *See e.g., In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988).

V. **New claims 23-29**

New claim 23 is added dependent upon claim 1 presenting the recitation of original claim 4. This claim is believed allowable for the same reasons as claims 1 and 4. Claim 24 is dependent upon claim 3. Claim 24 recites that the rectangular feeder exit of the cross shaped feeder has a smaller cross sectional area of the rectangular feed opening of the feeder. Support for this amendment is found in Figs. 5G and 5I. This claim is believed allowable for at least the same reasons as claim 3.

New claim 25 is presented dependent upon claim 3 adding the recitation that the trough-shaped feeder has a pair of opposed, parallel sides. While the feeder 130 has a pair of walls that are converging, it also has a pair of walls that remain parallel, as

illustrated in Figs. 5G-5I. This feature is not taught or suggested by the *Johanson* reference.

Claim 26 is added dependent upon claim 3, adding the recitation that the rectangular-to-circular conduit has sides that diverge from each other as they move away from the circular end towards the rectangular end of the conduit. This feature is illustrated, for example, in Figs. 1 and 2. This feature is also not taught or suggested by the *Johanson* reference. Claim 27 depends upon claim 26 adding the feature of claim 25 of the feeder having a pair of opposed, parallel sides.

Claims 28 and 29 depend upon claims 3 and 4 respectively adding the feature of the agitator of claim 2.

As can be seen, no new matter is added in new claims 23-29. Additionally, these claims are allowable as they recite features that are not taught or suggested by *Johanson* and also are dependent upon allowable independent claims.

VI. Prior Art Made of Record

The prior art made of record has been considered, but is not believed to affect the patentability of the presently pending claims.



CONCLUSION

In light of the foregoing amendments and for at least the reasons set forth above, Applicant respectfully submits that all objections and/or rejections have been traversed, rendered moot, and/or accommodated, and that the now pending claims 1-29 are in condition for allowance. Favorable reconsideration and allowance of the present application and all pending claims are hereby courteously requested. If, in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited to call the undersigned agent at (770) 933-9500.

Respectfully submitted,

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